

## Conditional Probability – Notes

PAP Geometry

Name: \_\_\_\_\_

Date: \_\_\_\_\_ Pd: \_\_\_\_\_

Use the table to answer the following:

- a) What is the probability that a shot was made?  
 $P(\text{shot made}) =$

- b) What is the probability that a shot taken was by a female?  
 $P(\text{female}) =$

- c) What is the probability a shot was made and the shooter was a female?  
 $P(\text{shot made and female}) =$

- d) What is the probability a shot was missed and the shooter was a male?  
 $P(\text{shot missed and male}) =$

- e) Given that a shot was made, what is the probability the shooter was female?  
 $P(\text{female} | \text{shot made}) =$

- f) Given that a shot was missed, what is the probability the shooter was female?  
 $P(\text{female} | \text{shot missed}) =$

- g) Given that a female was the shooter, what is the probability the shot was made?  
 $P(\text{shot made} | \text{female}) =$

	Made shot	Missed shot	TOTAL
Male			
Female			
Total			

**Conditional probability** is the probability that event A will happen under the condition that event B has already occurred.

Conditional Probability Formula:

- h) Using the formula, find the probability the shooter was female given that a shot was missed?

**Example 1:** Four friends cleaning out their math folders were too lazy to get up and throw the papers in the trash. Instead, they sat at their desks and took shots at the wastebasket. Together, they took a total of 188 shots. Only 89 of the shots actually made it in the wastebasket and, of those that went in, only 32 of them hit the rim before going in. Sixty-four shots missed the rim and the wastebasket completely.

a) What is the probability a shot hit the rim but did not go into the wastebasket?

$P(\text{hit the rim and missed}) =$

b) What is the probability a shot went in the basket?

$P(\text{shot made}) =$

c) What is the probability a shot went in if the shot hit the rim?

$P(\text{shot made} | \text{hit rim}) =$

	Made shot	Missed shot	TOTAL
Hit the rim			
Did not hit rim			
Total			

d) Given the shot was missed, what is the probability that the shot hit the rim?

e) What is the probability a shot was missed given it hit the rim?

**Example 3** A jar contains black and white marbles. Two marbles are chosen without replacement. The probability of selecting a black marble and then a white marble is 0.34, and the probability of selecting a black marble on the first draw is 0.47. What is the probability of selecting a white marble on the second draw, given that the first marble drawn was black?

**Example 4** The probability that Janice uses a tanning bed is  $\frac{3}{10}$ . The probability that she uses a tanning bed and develops skin cancer is  $\frac{4}{15}$ . Find the probability that Janice develops skin cancer, given that she uses a tanning bed.

**Example 5** The probability that Sue will go to Mexico in the winter and to France in the summer is 0.40. The probability that she will go to Mexico in the winter is 0.60. Find the probability that she will go to France this summer, given that she just returned from her winter vacation in Mexico.